| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/574,053 | YOSHINAGA ET AL. | |
| | Examiner | Art Unit | |
| | Mark L. Shevin | 1793 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) *9-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/10/2007 and 03/17/2008*.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *20080505* .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Status*

**1.** Claims 1-14, filed March 29th, 2006, are pending.

### *Priority*

**2.** Applicants' claim to benefit of Japanese patent applications 2003-341,152 and 2003-341,456, filed September 30th, 2003 have been recorded.

### *Telephone Election*

**3.** In a telephonic interview on October 11th, 2007, Applicant elected Group I, claims 1-8 without traverse. Claims 9-14 are withdrawn as non-elected.

### *Restriction*

**4.** Restriction is required under 35 U.S.C. 121 and 372. This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 1-8, drawn to a thin steel sheet product

Group II, claims 9-14, drawn to a process of making a thin steel sheet hot-dip galvanized product.

**5.** Unity exists only when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding claimed technical features. The express "special technical features" is defined as meaning those technical

features that define a contribution which each of the inventions, considered as a whole, makes over the prior art." (Rule 13.2).

The question of unity of invention has been reconsidered retroactively by the examiner in view of the search performed; a review of **Kawabe** (JP 2001-226741) makes clear that the claimed special technical feature (high strength, high yield ratio steel of claim 1) is not novel and non-obvious over the prior art. Furthermore, this appears to demonstrate that the technical feature does not define a contribution which each of the inventions, considered as a whole, makes over the prior art. Thus, lack of unity becomes apparent "a posteriori" after taking the prior art into consideration. Accordingly, the prior art of the record supports restriction of the claimed subject matter in to the groups as mentioned immediately above.

**Joint Inventors**

**6.** Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Objections***

**7.** **Claim 1** is objected to because of the following informalities: The limitation of "TSxEL of 3320 or more..." at line 21 should read "$TSx(EL)^{1/2}$" as used in the instant specification in Tables 2-4. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**8.** **Claims 1-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kawabe** (JP 2001-226741).

Kawabe

Kawabe, drawn to the production of a high strength cold rolled steel having a tensile strength of greater than 780 MPa and excellent balance in strength and ductility, teaches a steel sheet stock with the following composition:

| Alloying additions (%) | Kawabe | Overlap with instant claim |
|---|---|---|
| **C** | 0.05-0.15 | 0.05-0.10 |
| **Si** | 0.05-0.50 | 0.3-0.5 |
| **Mn** | 2.5-3.5 | 1.7-3.2 |
| **P** | 0-0.02 | 0.001-0.02 |
| **S** | 0-0.0035 | 0.0001-0.0035 |
| **Al** | 0-0.1 | 0-0.06 |

| | | |
|---|---|---|
| **N** | 0-0.006 | 0.0001-0.006 |
| **Ti** | 0.001-0.05 | 0.01-0.05 |
| **Nb** | 0.005-0.08 | 0.012-0.055 |
| **Mo** | 0.01-1.0 | 0.07-0.55 |
| **B** | 0.0001-0.005 | 0.0005-0.004 |

Weldability was cited as a consideration in balancing the amount of carbon to be added to the alloy (para 0011).

From Table 4, the average yield ratio, calculated by dividing all the disclosed yield strengths by the tensile strengths, was 0.712. The average $TSx(EL)^{1/2}$ value was about 4900 $MPa\%^{1/2}$ and the average $YRxTSx(EL)^{1/2}$ was thus about 3500 $MPa^2\%^{1/2}$.

Regarding claim 1, it would have been obvious to one of ordinary skill in metallurgy, at the time the invention was made, taking the disclosure of Kawabe as a whole, to produce a high yield ratio, high strength thin steel sheet as in claim 1 as Kawabe discloses a steel alloy with C, Si, Mn, P, S, Al, N, Ti, Nb, Mo, and B additions which overlap the claimed ranges, as well as demonstrated mechanical properties of yield ratio, tensile strength, and elongation which meet the limitations of the instant claim.

With respect to the composition of the thin steel sheet, it would have been obvious to one of ordinary skill in the art at the time of the invention to choose the instantly claimed ranges through process optimization, since it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum

or workable ranges involves only routine skill in the art. MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists."

With respect to the compositional formula at line 18, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D. 357,553 O.G. 177., 57 USPQ 1 17, Taklatwalla v. Marburg, 620 O.G. 685, 1949 C.D. 77, and In re Pilling, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al. 149 USPQ 685,688. It would have been obvious to one of ordinary skill in the art to select alloy compositions fulfilling the claimed compositional relationships from the alloy compositional ranges disclosed by Kawabe.

Regarding claim 2, Kawabe further discloses the incorporation of one of more of Cr: 0.01-0.5%, Ni: 0.1-1.0%, Cu: 0.01-1.0%. These alloying additions, in addition the components disclosed in the rejection of claim 1, render claim 2 obvious to one of ordinary skill in the art.

Regarding claims 3 and 4, with respect to the intensity ratio of the {110} plane, one of ordinary skill would expect such intensity to come principally from the rolling step, which is often used to generate texture and as such the Examiner looks to the process used by Kawabe.

The steel sheet is heated to 1050-1250°C, hot-rolled with a finishing rolling temperature of 900 °C (which is above the $Ar_3$ for such a low carbon steel) and cooled to 400 °C at a cooling rate of 10-100 °C/s (para 0010). As Kawabe teaches a processing route that is substantially similar to that of the instant claims (per claim 9) , one would of ordinary skill would reasonably expect similar texture properties including the claimed intensity ratio. From MPEP 2112, para. V, subpara 1: "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on 'inherency' under 35 U.S.C. 102, on '*prima facie* obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same..."

**9.** **Claims 5-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kawabe** (JP 2001-226741) as applied to claims 1-4 above, in further view of **Marder** (Arnold R. Marder, Effects of Surface Treatments on Materials Performance, in *Materials Selection and Design, Vol. 20 of the ASM Handbook*, (1997), p. 1-10).

The disclosure of Kawabe was discussed above, however Kawabe neither discloses a further hot-dip galvanizing nor a galvannealing (alloying) process.

Marder

Marder teaches that steels are often coating with a layer of zinc by a hot-dip galvanizing process to improve corrosion resistance (p. 4, para 1). Marder further teaches that weldability, in particular the spot weldability, of zinc coatings is an important property because most galvanized product is joined using spot welding (p. 6, para 1).

With respect to galvanneal coatings (galvanizing followed by alloying by diffusion in a later annealing stage), formability is important because if the forming operation cracks the zinc coating, corrosion resistance will be lessened (p. 7, para 2). Furthermore, galvanneal coatings offer improved spot weldability and paintability over galvanized coatings (p. 7, para 2).

Regarding claim 4-8, it would have been obvious to one of ordinary to one of ordinary skill in metallurgy, at the time the invention was made, taking the disclosures of Kawabe and Marder as a whole, to incorporate the hot-dip galvanizing and hot-dip galvannealing coatings of Marder into the steel sheet product of Kawabe as Marder taught that a galvanized product has increased corrosion resistance and in particular, galvannealed products have improved spot weldability and paintability which would motivated one interested in producing steel sheets as these products are usually use in automotive applications as taught by Kawabe.

***Conclusion***

**-- Claims 1-8 (All pending) are rejected**
**-- No claims are allowed**

The rejections above rely on the references for all the teachings expressed in the text of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588. The examiner can normally be reached on Monday - Thursday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Mark L. Shevin/**

**/Roy King/**

**Supervisory Patent Examiner, Art Unit 1793**

10-574,053
May 5th, 2008